

### ASSIGNMENT 3

Textbook Assignment: "Power Distribution," chapter 4, pages 4-1 through 4-45.

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| <p>3-1. A power distribution system includes all the parts of an electrical system between the power source and the customer's service entrance.</p> <ol style="list-style-type: none"><li>1. True</li><li>2. False</li></ol>   | <p>3-5. What is the minimum required clearance, in feet, between crew personnel and a 20,000-volt circuit?</p> <ol style="list-style-type: none"><li>1. 6</li><li>2. 2</li><li>3. 3</li><li>4. 8</li></ol>   |
| <p>3-2. What is the primary purpose of a line crew?</p> <ol style="list-style-type: none"><li>1. To meet the project completion date</li><li>2. To ensure on-the-job safety</li><li>3. To control cost overruns</li></ol>   | <p>3-6. What is the most popular type of anchor?</p> <ol style="list-style-type: none"><li>1. Plate</li><li>2. Never-creep</li><li>3. Deadman</li><li>4. Expanding</li></ol>   |
| <p>3-3. A hard hat for a line crew member must be rated to withstand what maximum voltage?</p> <ol style="list-style-type: none"><li>1. 5,000</li><li>2. 10,000</li><li>3. 20,000</li><li>4. 30,000</li></ol>   | <p>3-7. A "down guy" used at the end of a pole line to counterbalance the pull of the line conductors is what type of guy?</p> <ol style="list-style-type: none"><li>1. Balancing</li><li>2. Counterbalance</li><li>3. Counteracting</li><li>4. Terminal</li></ol> |
| <p>3-4. When should you install grounding sets on a jobsite?</p> <ol style="list-style-type: none"><li>1. When working on new construction</li><li>2. When the disconnecting means is not in sight</li><li>3. When the line crew is spread out over a long span of pole-line construction</li></ol> | <p>3-8. Guys installed to protect the facilities and limit the damage if a conductor breaks are known by what term?</p> <ol style="list-style-type: none"><li>1. Storm guys</li><li>2. Line guys</li><li>3. Both 1 and 2 above</li><li>4. Span guys</li></ol>      |

- 3-9. An anchor guy with a horizontal strut at a height above the sidewalk to clear the pedestrians is referred to as a head guy.
1. True
  2. False
- 3-10. What type of guy is used to transfer the strain on a pole to another structure?
1. Arm
  2. Head
  3. Span
  4. Stub
- 3-11. What type of guy is used on steep hills to counteract the downhill strain of the line?
1. Arm
  2. Head
  3. Span
  4. Stub
- 3-12. What type of guy is used to counteract the force caused by an uneven number of dead-end conductors on one side of a crossarm than on the other?
1. Arm
  2. Head
  3. Span
  4. Stub
- 3-13. What type of guy is installed between a line pole and a pole on which there is no energized equipment?
1. Arm
  2. Head
  3. Span
  4. Stub
- 3-14. What type of guy is often installed to obtain adequate clearance for guy wires extending across a street or highway?
1. Arm
  2. Head
  3. Span
  4. Stub
- 3-15. When there is no excessive strain, single crossarms should be installed in a straight line in what manner?
1. Every other crossarm should face the same direction
  2. All crossarms should face north if the distribution system is running north and south
  3. All crossarms should face east if the distribution system is running east and west
  4. All crossarms should face the same direction
- 3-16. Double crossarms are used for which of the following purposes?
1. To eliminate excessive strain
  2. To provide additional safety whenever the line terminates
  3. To provide support at corners and angles
  4. Each of the above
- 3-17. When a branch circuit takes off at a right angle to the main line, what type of crossarm is required?
1. Double
  2. Buck
  3. Side
  4. Single

3-18. What factor determines the spacing of insulator pins?

1. The length of the crossarm
2. The size of insulator pins
3. The line voltage
4. The quantity of insulator pins

3-19. What is the purpose of guying a pole?

1. To maintain proper leveling of crossarms
2. To keep a pole-mounted transformer from pulling a pole out of alignment
3. To offset the strain applied on the pole from a load pulling in the opposite direction
4. To aid in the proper sag of individual wire spans

3-20. What type of insulator should be used when the right-of-way is narrow?

1. Post
2. Pin
3. Suspension
4. Strain

3-21. What, in anything, can be done to suspension insulators that permits the same-size insulator to be used for varying high voltage?

1. Redip the insulators in epoxy
2. Link the insulators together
3. Insert fiber glass sheets between the insulators
4. Nothing

3-22. What type of conductor wire is commonly used for line conductors?

1. Hard-drawn copper
2. Annealed copper
3. Medium-hard-drawn copper
4. Aluminum and aluminum/steel

3-23. Aluminum wire when compared to copper wire has what percentage of conductivity?

1. 80%
2. 66%
3. 60%
4. 45%

3-24. Conductors are classified as solid or stranded.

1. True
2. False

3-25. What is the largest and smallest size of conductors used in distribution systems?

1. 5/0 and 0
2. 2/0 and 0000
3. 3/0 and 20
4. 4/0 and 30

3-26. What is the purpose of the distribution substation system?

1. It changes distribution circuit voltage to transmission voltage
2. It changes transmission voltage to distribution circuit voltage
3. It changes distribution circuit voltage to usable 120/240 volts
4. It changes three-phase voltage to single-phase voltage

- 3-27. A distribution transformer reduces the voltage of the distribution circuit to a usable voltage, usually 120/240 volts.
1. True
  2. False
- 3-28. Which of the following cutouts, when blown, causes the resultant arc to attack the walls of the fiber tube?
1. Open link
  2. Enclosed fuse
  3. Open fuse
- 3-29. What type of primary circuit is used when lighting makes up the substantial portion of the load?
1. Wye-delta
  2. Delta-wye
  3. Delta
  4. Wye
- 3-30. A secondary circuit carries 600 Vac or less.
1. True
  2. False
- 3-31. When installing a service drop over a driveway, you must maintain a minimum aboveground clearance of how many feet?
1. 18
  2. 16
  3. 14
  4. 12
- 3-32. What is the purpose of the distribution lightning arresters?
1. They protect the insulators
  2. They protect the distribution transformers
  3. They protect the fuse cutouts
  4. Each of the above
- 3-33. High-voltage switches are divided into what general classes?
1. Air
  2. Oil
  3. Vacuum
  4. Each of the above
- 3-34. Of the following types of switches, which one produces an arc when a current-carrying circuit is opened?
1. Air
  2. Oil
  3. Vacuum
  4. Manual
- 3-35. A three-phase, air-break switch is opened in what manner?
1. Manually, one phase opens at a time only
  2. Automatically, one phase opens at a time only
  3. Manually or automatically, all phases open at the same time
  4. Manually or automatically, one phase opens at a time
- 3-36. What type of high-voltage switch should NOT be opened under load?
1. Oil
  2. Air
  3. Vacuum

- 3-37. The purpose of a disconnect switch is to isolate a line so it is dead electrically.
1. True
  2. False
- 3-38. High-voltage oil switches are immersed in oil for what primary reason?
1. To keep the switch from corroding
  2. To keep the switching mechanism lubricated
  3. To break the circuit when the switch is opened
  4. To keep the switching mechanism cool
- 3-39. An oil recloser can perform which, if any, of the following actions?
1. It automatically recloses the open circuit after detecting an overload fault in the system
  2. It carries excessive current for a period of 5 minutes
  3. It opens a circuit once an overload fault has cleared
  4. None of the above
- 3-40. When may you find all three phases of an oil switch in one container?
1. When the container is large enough to accommodate all three phases
  2. When it is important to open all extremely high-voltage switches together
  3. When they are pad-mounted only
  4. When the voltage is not extremely high
- 3-41. When linemen place a recloser in the “single-shot” mode, it is for what reason?
1. So it resets automatically
  2. So it cannot reset automatically
  3. So it resets only one time
  4. So it resets only three times
- 3-42. Aerial bucket trucks are essential when working on what type of poles?
1. Wooden poles
  2. Concrete poles
  3. Steel poles
  4. Both 2 and 3 above
- 3-43. An earth auger is designed to dig holes up to how many feet deep?
1. 5
  2. 6
  3. 7
  4. 8
- 3-44. What type of power distribution equipment is most commonly used to set poles?
1. Utility truck
  2. Aerial bucket truck
  3. Earth auger
  4. Each of the above
- 3-45. What is the purpose of a pole gin?
1. It keeps the pole straight
  2. It lifts the pole in place
  3. It provides a secure point for attaching other lifting equipment
  4. It keeps the pole from falling during manual pike lifting

- 3-46. Which of the following advantages is/are apparent when you use a block and tackle?
1. The user can pull downward while lifting the load
  2. The manual force being applied need only be a fraction of the weight of the load being lifted
  3. Both 1 and 2 above
  4. Support equipment is not required
- 3-47. Snatch blocks ordinarily are used when it is necessary to change the direction of the pull on a line.
1. True
  2. False
- 3-48. When you are operating a bucket truck, what should be your prime concern?
1. Smooth operation
  2. Job completion time
  3. Safety of operation
  4. Insulation from high-power lines
- 3-49. The handline is considered a piece of personal equipment.
1. True
  2. False
- 3-50. The bulldog grip is used for which of the following tasks?
1. To straighten conductors
  2. To pull ground rods
  3. To apply strain on guy wires
- 3-51. What is the purpose of putting the face of a pole on the inside curve?
1. To make all the poles uniform
  2. To allow the strain on the crossarms to be against the curve of the pole
  3. To eliminate the use of guy wires
  4. To conform to a common practice used by all linemen
- 3-52. A gain should be installed how many inches from the top of a utility pole?
1. 12
  2. 18
  3. 24
  4. 30
- 3-53. At what depth should you set a 60-foot pole, in soil?
1. 5 ft
  2. 7 ft
  3. 8 ft
  4. 11 ft
- 3-54. At what sloping angle, if any, should the roof or the top of a new pressure-treated pole be cut?
1. 10°
  2. 15°
  3. 20°
  4. None
- 3-55. What tools should you use to remove dirt from a hole 4 feet deep that has been dug manually?
1. Pick and shovel
  2. Pick and spoon shovel
  3. Shovel and digging bar
  4. Digging bar and spoon shovel

3-56. To allow for tamping backfill, you should ensure the hole is approximately how many inches larger than the base of the pole?

1. 10
2. 8
3. 6
4. 4

3-57. When you are raising a pole, what device serves as a support at each new position to temporarily support the weight of the pole?

1. A butt board
2. A jenny
3. A cant hook
4. A crossarm

3-58. When erecting a power-line pole, a piker should brace the pike pole on his stomach.

1. True
2. False

3-59. Assume you are mounting a crossarm on a pole. After you have set the pole, what steps are necessary to complete the crossarm installation?

1. Leveling the crossarm and fastening the crossarm braces to the pole only
2. Leveling the crossarm and tightening the through bolt only
3. Tightening the through bolt and fastening the crossarm braces to the pole only
4. Leveling the crossarm, fastening the crossarm braces to the pole, and tightening the through bolt

3-60. Normally, when conductors are being strung, they are taken from a reel that is

1. rolled over the ground
2. held solidly in place
3. mounted on an axle that revolves freely
4. placed on its side and left free to turn

3-61. For what purpose is the neutral conductor placed on a center crossarm pin?

1. To provide a clear space for the lineman to climb through
2. To serve as a way of identifying hot conductors
3. To conform to traditional Navy practices

3-62. When wires have been pulled to approximately the desired position, a lineman should measure the sag at what location(s)?

1. On the end nearest the cable reel
2. At the center of the span
3. In a span on either end of the group of spans
4. On the end farthest from the cable reel

3-63. To ensure that lines are installed correctly, you should use what method(s) to measure line sag?

1. Traction dynamometer
2. Target sighting
3. Timing vibration
4. Each of the above

- 3-64. Refer to table 4-2 in the text. What is the desired sag for a 175-foot span of AWG No. 2 wire at 60°F?
1. 13.0 in.
  2. 16.5 in.
  3. 22.0 in.
  4. 28.0 in.
- 3-65. After stringing and sagging the conductors properly, when should you tie the conductors to the insulators?
1. After 1/2 hours, but before 4 hours, depending upon the length of the run
  2. After 24 hours, regardless of the size of the wire or the length of the run
  3. As soon as possible
  4. After exactly 2 hours
- 3-66. Concerning the use of tie wire in tying-in conductors, which of the following statements is correct?
1. You should not wrap the tie wire too tightly
  2. You should always use annealed tie wire
  3. You may reuse tie wires that are long enough
  4. You should always use No. 2 tie wire
- 3-67. On power distribution lines, pole ground connections are required at which of the following intervals?
1. Every mile only
  2. Every pole
  3. Every pole with equipment
  4. Every other pole
- 3-68. On existing distribution lines, the pole ground rods should be (a) how many inches in diameter and (b) how many feet long?
1. (a) 5/8 (b) 8
  2. (a) 5/8 (b) 10
  3. (a) 3/4 (b) 8
  4. (a) 3/4 (b) 10
- 3-69. Upon discovering enlarged tongue holes on your body belt, you should replace the body belt.
1. True
  2. False
- 3-70. The minimum satisfactory length of pole gaffs on the inner surface of lineman's climbers is at least
1. 5 1/2 in.
  2. 3 1/2 in.
  3. 1 1/4 in.
  4. 1 in.
- 3-71. Gaffs should be sharpened in what manner?
1. With an emery wheel, but not to a needlepoint
  2. With an emery wheel, to a needlepoint
  3. With a file, but not to a needlepoint
  4. With a file, to a needlepoint



3-72. While climbing a pole with the aid of climbers, you must grasp each side of the pole with your hands for what primary reason?

1. To support a part of your weight
2. To provide proper balance
3. To aid in sinking the gaffs into the pole
4. To maintain a stiff-legged, position

3-73. You have climbed a pole to the desired height and have positioned your feet so the left foot is slightly higher than the right with the knees slightly bent. You are now ready to secure the pole strap. What should be your next action?

1. Unsnap one end of the pole strap
2. Wrap your right arm around the pole
3. Crook your left arm around the pole
4. Grasp one end of the pole strap with your left hand

3-74. When performing pole-top rescue on an electric shock victim, you should perform what step first?

1. Clear the victim from any live conductors
2. Contact someone who can assist you
3. Provide for your own safety
4. Evaluate the situation

3-75. When performing pole-top rescue, you should use what type of knot in the line to lower a victim?

1. Blackwall hitch
2. Square
3. Clove hitch
4. Three half-hitches